

The Relationship Between Psychological Inflexibility and Well-Being in Adults: A Meta-Analysis of the Acceptance and Action Questionnaire

Clarissa W. Ong
Boston University
University of Toledo

Abigail L. Barthel
Boston University

Stefan G. Hofmann
Philipps-Universität Marburg

Psychological inflexibility is defined as the rigid responding to stimuli (e.g., unpleasant thoughts and feelings) that interferes with well-being and valued actions. It is the treatment target in acceptance and commitment therapy (ACT). Despite the centrality of the link between inflexibility and well-being to ACT theory, an empirical review clarifying the nature of this relationship has not been conducted. As such, the current meta-analysis examined the meta-correlation between psychological inflexibility, measured by the Acceptance and Action Questionnaire (AAQ) and

its variants, and well-being. A systematic review yielded 151 studies, including 25 versions of the AAQ and 43 well-being measures. Consistent with ACT theory, higher psychological inflexibility was associated with worse well-being ($r = -.47$, 95% CI $[-.49, -.45]$). In addition, sample diagnosis, type of AAQ, and type of well-being measure significantly moderated this relationship. Overall, our findings support the hypothesized link between psychological inflexibility and worse well-being. Limitations include reliance on cross-sectional data, precluding causal interpretation.

The authors thank Emily Brown, Hannah McCarthy, and Jiaxuan Tong for assisting with screening abstracts and Steven C. Hayes, Ph.D., for his conceptual input.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest Statement: SGH receives financial support by the Alexander von Humboldt Foundation (as part of the Alexander von Humboldt Professur), the Hessische Ministerium für Wissenschaft und Kunst (as part of the LOEWE Spitzenprofessur), NIH/NIMH R01MH128377, NIH/NIMH U01MH108168, Broderick Foundation/MIT, and the James S. McDonnell Foundation 21st Century Science Initiative in Understanding Human Cognition – Special Initiative. He receives compensation for his work as editor from SpringerNature. He also receives royalties and payments for his work from various publishers. All other authors declare that they have no conflicts of interest.

Address correspondence to Stefan G. Hofmann, Ph.D., Philipps-Universität Marburg, Schulstrasse 12, 35037 Marburg/Lahn, Germany. e-mail: stefan.hofmann@uni-marburg.de.

Keywords: psychological inflexibility; acceptance and action questionnaire; well-being; life satisfaction; meta-analysis

PSYCHOLOGICAL INFLEXIBILITY is defined as rigid responding to inner experiences (e.g., thoughts, feelings) in ways that interfere with well-being and pursuit of valued actions (Hayes et al., 2011; Kashdan et al., 2020). It is the key target of change in acceptance and commitment therapy (ACT), a cognitive-behavioral treatment focused on reducing suffering and enhancing well-being through decreasing psychological inflexibility and increasing psychological flexibility (Hayes et al., 2011). In fact, from an ACT perspective, psychological inflexibility is a primary cause of suffering, such that individuals who rigidly avoid difficult thoughts or emotions and important or meaningful activities are hypothesized to experience greater

distress and impairment, compromising well-being and adaptive coping in daily life. Psychological inflexibility tends to manifest topographically as struggles with emotion regulation, avoidance behaviors, and maladaptive cognitions, and it has been consistently associated with various forms of psychopathology (Levin et al., 2014).

Research using different study designs supports the role of psychological inflexibility as a process of change related to meaningful outcomes. First, reductions in psychological inflexibility across evidence-based treatments (EBTs) have been associated with greater well-being over the course of treatment (Arch et al., 2012; Arch & Craske, 2008; Gloster, Klotsche, et al., 2017; Hayes et al., 2019). Second, meta-analytic and literature reviews have shown that ACT and other psychological flexibility-promoting interventions are effective for improving outcomes in various domains, including chronic pain (e.g., Gentili et al., 2019), cancer (e.g., Zhao et al., 2021), diabetes (e.g., Kioskli et al., 2019), and obesity (e.g., Ciarrochi et al., 2014). Third, psychological inflexibility itself is associated with maladaptation in varied contexts, including cancer (e.g., Brown et al., 2020), general stigma and prejudice (e.g., Krafft et al., 2017), diabetes (e.g., Kılıç et al., 2022), and weight problems (e.g., Finger et al., 2020).

Conversely, psychological flexibility has been linked to healthy coping and well-being in medical populations (McCracken & Morley, 2014) and serves a protective function in the general population (Gloster, Meyer, et al., 2017). Furthermore, research on human flourishing supports well-being as a malleable target linked to psychological flexibility and values (Dahl, Wilson-Mendenhall, & Davidson, 2020). Such research suggests that focusing on flourishing and well-being is distinct from symptom or problem-focused psychotherapies (Jankowski et al., 2020) and has positive health benefits (VanderWeele et al., 2019), underscoring the utility of understanding the relationship between psychological inflexibility and *well-being*, not merely that between psychological inflexibility and symptoms.

Despite its relevance to a range of psychological problems and treatments (Hayes et al., 2022), psychological inflexibility has been notoriously difficult to operationalize and measure because it is functionally rather than topographically defined, requiring some insight on the respondent's part to discern the function of their own behavior. Nonetheless, numerous validated measures can be found in the literature, with the most popular measure of psychological inflexibility being the

Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011; Cherry et al., 2021). The AAQ has been updated several times, and its current form, the AAQ-II, is a seven-item revised version of its original iteration. There are also at least 19 domain-specific variants based on the AAQ, which typically assess psychological inflexibility in the context of a specific problem (e.g., chronic pain, trichotillomania; see Ong, Lee, et al., 2019, for a review). The AAQ and its variants have been used in healthy, subclinical, medical, and psychiatric samples across numerous languages and translations (Ong, Lee, et al., 2019). Psychometric studies on the AAQ-II have demonstrated test-retest reliability, incremental validity, convergent validity, and measurement invariance across demographically diverse samples (Bond et al., 2011; Correa-Fernández et al., 2020; Gloster et al., 2011), showing the AAQ-II to be a well-rounded measure of psychological inflexibility. Furthermore, these properties appear to hold for its translations (e.g., Eisenbeck & Szabó-Bartha, 2018; Paladines-Costa et al., 2021). In addition, a systematic review found that the AAQ was the most consistently replicated mediator of treatment outcomes, supporting its empirical status as a process of change measure (Hayes et al., 2022).

At the same time, the AAQ-II has been criticized for its poor discriminant validity with respect to general distress (e.g., Rochefort et al., 2018; Tyndall et al., 2019; Wolgast, 2014), lack of measurement invariance in clinical vs. nonclinical samples (Ong, Pierce, et al., 2019), and overemphasis on the experiential avoidance facet of psychological inflexibility (Francis et al., 2016). Accordingly, other validated measures of psychological inflexibility that aim to address some of these limitations have been developed. They include the Comprehensive assessment of ACT processes (CompACT; Francis et al., 2016), a 23-item self-report measure that assesses the six dimensions of psychological flexibility, and the Multidimensional Psychological Flexibility Inventory (MPFI; Rolffs et al., 2016), a 60-item self-report measure that assesses the 12 dimensions of psychological flexibility and inflexibility. In addition, some researchers have critiqued the empirical status of psychological flexibility as a process of change in ACT in the first place, underscoring the need for stronger measures and more robust study designs (Arch et al., 2022). Nonetheless, given the ubiquity of the AAQ and the vast amount of data associated with it relative to more recently developed measures, the current review focuses on the AAQ and its variants as primary measures of psychological inflexibility.

Well-being is broadly defined and may include such constructs as life satisfaction, quality of life, vitality, and health or psychosocial health. Like the AAQ, well-being measures are sometimes domain-specific, which means they assess well-being as it pertains to a specific diagnosis (e.g., ability to do activities of daily living for chronic pain) as opposed to global well-being. Other well-being measures parse the different components of well-being, which may include emotional, physical, social, psychological, or general health, in addition to providing a total sum score. A more ACT-consistent version of well-being may conceptualize it as a measure of valued action, meaning, fulfillment, or vitality; that is, is the individual acting in a way that is in line with their values or maximizes meaningful life satisfaction?

STUDY AIMS AND IMPACT

With the rising popularity of ACT, research on psychological inflexibility and related concepts has exponentially increased over the past several decades, including several meta-analyses and systematic reviews on ACT processes and/or psychological inflexibility. For example, [Daks and Rogge \(2020\)](#) summarized the relationship between psychological (in)flexibility and family and romantic relationship functioning, whereas [Garner and Golijani-Moghaddam \(2021\)](#) reviewed the relationship between psychological flexibility and work-related quality of life in healthcare professionals. Both meta-analyses found that psychological flexibility was generally associated with positive outcomes (e.g., compassion satisfaction in healthcare professionals), whereas psychological inflexibility was associated with worse outcomes (e.g., parenting stress). In addition, [Kashdan and Rottenberg \(2010\)](#) conducted a narrative review of the construct of psychological (in) flexibility, also supporting the relationship between psychological flexibility and well-being. Although each of these reviews relate, in part, to the overall relationship between psychological inflexibility and well-being, previous reviews either did not use meta-analytic methods to quantify the magnitude of this relationship or focused on specific samples rather than a wide range of samples. To our knowledge, no study has used a meta-analysis to quantify the association between these two constructs broadly, which is striking given the key roles they play in the theory underlying ACT.

Relatedly, psychological research and interventions have shifted toward a focus on cross-cutting processes of change ([Hayes et al., 2019](#)), which highlights the specific need for a meta-

analytic understanding of the relationship between a transdiagnostic process, such as psychological inflexibility, and a personally relevant outcome, like well-being. Further, ACT and other EBTs base much of their frameworks on the assumption that psychological inflexibility and well-being are associated, so greater understanding of the nature of this relationship, including moderators, is warranted to empirically validate this theory. Thus, the primary aims of this study are to: (1) examine the meta-correlation between psychological inflexibility—as measured by the AAQ and its variants—and well-being, and (2) identify moderators of this relationship, including study characteristics (e.g., sample size, mean age, sample diagnosis) and measure characteristics (e.g., type of AAQ, aspect of well-being).

Method

The meta-analytic protocol for this research was registered with the International Prospective Register of Systematic Reviews (PROSPERO) and assigned the following registration identifier: CRD42020192925. This meta-analysis followed the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). [Figure 1](#) shows a PRISMA figure for this study. Data, code, and appendices for this meta-analysis can be found at <https://osf.io/n8usm/>.

LITERATURE SEARCH

To identify eligible articles for the current meta-analysis, we entered predetermined search terms into the following online databases: PsycINFO, Web of Science, and PubMed. Depending on the settings of the database, we used the “Filter” option whenever possible to narrow results down to articles or academic journals, adult populations (at least 18 years old), and articles written or translated into English. The initial literature search was conducted in August 2021, and an updated search was done in November 2022. PubMed and PsycINFO searches were set to a “Title/Abstract” search, while Web of Science searched “All” due to inability to specify a title/abstract focus.

The following search string was entered into PsycINFO, Web of Science, and PubMed:

((“psychological flexibility”[title/abstract]) or (“psychological inflexibility”[title/abstract]) or (“acceptance and action questionnaire”[title/abstract]) or (“acceptance and action diabetes questionnaire”[title/abstract]) or (“acceptance and action epilepsy questionnaire”[title/abstract]) or (“avoidance and inflexibility scale”[title/abstract]) or (“body image psychological inflexibility

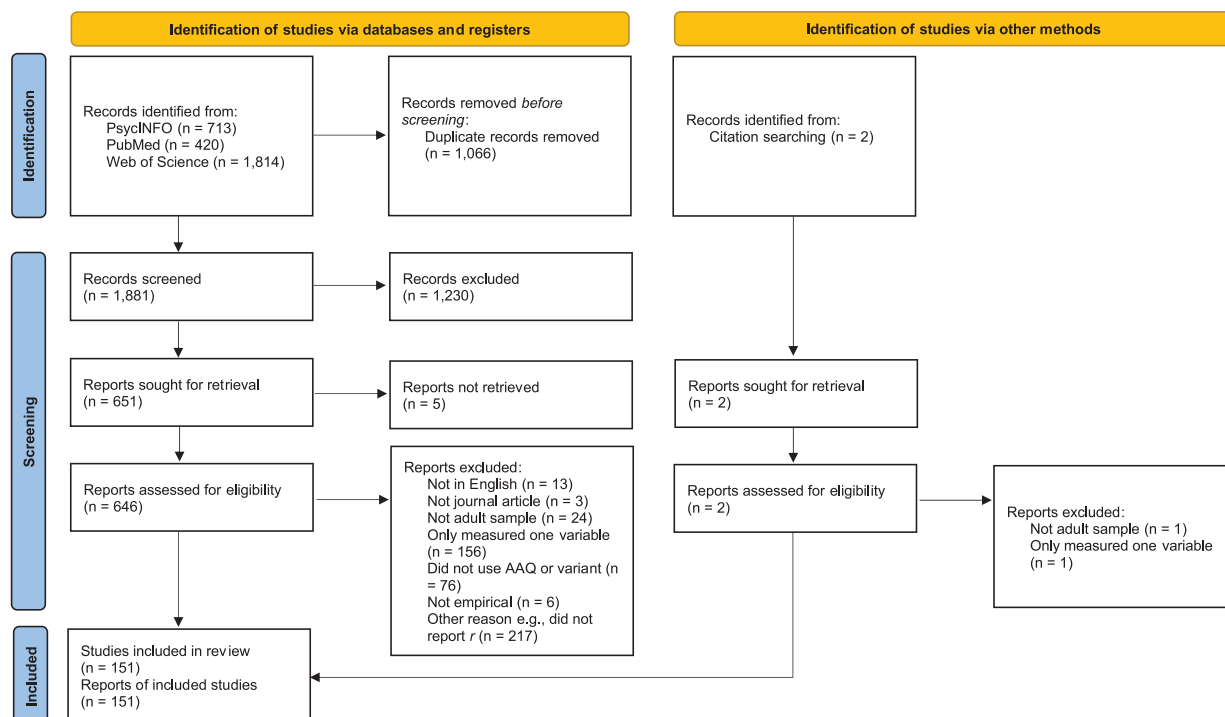


FIGURE I PRISMA flow diagram including searches of databases and other sources

scale”[title/abstract]) or (“chronic pain acceptance questionnaire”[title/abstract]) or (“experiential avoidance in caregiving questionnaire”[title/abstract]) or (“multiple sclerosis acceptance questionnaire”[title/abstract]) or (“parenting-specific psychological flexibility”[title/abstract]) or (“parental acceptance questionnaire”[title/abstract]) or (“parental psychological flexibility”[title/abstract]) or (“psychological inflexibility in pain scale”[title/abstract]) or (“sleep problem acceptance questionnaire”[title/abstract]) or (“tinnitus acceptance questionnaire”[title/abstract]) or (“voices acceptance and action scale”[title/abstract]) and (“functioning”[title/abstract]) or (“health”[title/abstract]) or (“outcome*”[title/abstract]) or (“quality of life”[title/abstract]) or (“satisfaction”[title/abstract]) or (“valu*”[title/abstract]) or (“well-being”[title/abstract]) or (“wellbeing”[title/abstract])).

We focused on studies that measured psychological inflexibility using the AAQ and its variants, because they are the most frequently used measures of psychological inflexibility and assess psychological inflexibility in a similar way (Cherry et al., 2021; Ong, Lee, et al., 2019). Well-being measures were included in our analyses if they purported or were known to assess global—as opposed to domain-specific—well-being, because we were interested in the relationship between psy-

chological inflexibility and overall well-being, whereas domain-specific well-being tended to be more problem-focused. In addition, when delineating well-being measures, we included measures of adaptive rather than maladaptive functioning (e.g., life satisfaction rather than burnout) in the spirit of orienting to flourishing/prosperity as an outcome rather than languishing/suffering (Hofmann & Hayes, 2019; Keyes, 2005). Based on literature and theory about the areas of life functioning psychological inflexibility is expected to be associated with, we considered the following constructs part of well-being: quality of life, well-being, functioning, valued action, life satisfaction, and flourishing.

STUDY SELECTION

The first and second authors (CWO and ALB) assessed article eligibility along with trained research assistants. Articles were included if they: (1) were written in or translated into English; (2) studied human participants; (3) were published in a peer-reviewed journal; (4) used an adult sample (age 18 and older); (5) simultaneously used the AAQ or its variant *and* a self-report measure of well-being or a related construct; and (6) reported a correlation coefficient between psychological inflexibility and well-being. Articles were excluded if they: (1) measured psychological inflexibility

using a non-AAQ instrument; (2) studied a sample that met criteria for a neurodegenerative disorder (e.g., Alzheimer's disease, Huntington's disease, multiple sclerosis); (3) were nonempirical (e.g., theoretical discussion); (4) were systematic reviews or meta-analyses; or (5) used a single-subject design (e.g., multiple baseline).

In the first stage of screening, article abstracts were evaluated against the eligibility criteria outlined above. Eighty percent of abstracts were screened by two reviewers as an additional measure of quality control, and any discrepancies were resolved via discussion until a consensus was reached. In the next stage, we reviewed full-text articles. Consistent with PRISMA guidelines, each full-text article was assessed by both reviewers (CWO and ALB); similar to the abstract screening, any discrepancies were resolved via discussion until a consensus was reached. Inter-rater reliability statistics were calculated to quantify agreement between reviewers on full-text screening.

DATA EXTRACTION

The first two authors (CWO and ALB) completed data extraction independently, compared data to check consistency, and resolved discrepancies through discussion as needed. Data for the following variables were extracted: (1) correlation coefficients representing the association between psychological inflexibility and well-being, (2) Cronbach's α (internal consistency of measures), (3) sample size, (4) sample demographic variables (i.e., age, percent female, percent identifying as

White/majority ethnicity), (5) sample characteristics (e.g., diagnosis), (6) language of the measure, (7) country of study origin, and (8) mean and standard deviation statistics for each of the measures extracted in a given article. Coding for categorical variables is described in [Table 1](#).

If studies reported correlations from multiple independent samples within the same paper, we extracted all data. If studies had overlapping samples, we only extracted data from the largest sample to maximize representativeness and avoid "double counting." For AAQ-related measures of psychological inflexibility, subscale scores reported without total scores (e.g., experiential avoidance subscale) were excluded. For well-being outcomes, we included total scores and certain subscale scores that better represented aspects of well-being hypothesized to be related to psychological inflexibility (e.g., mental health subscale of a quality-of-life measure but not the physical health subscale). Finally, we excluded studies that only measured stress or perceived stress as an outcome as they assess maladaptive rather than adaptive functioning.

STUDY QUALITY ASSESSMENT

The Appraisal tool for Cross-Sectional Studies (AXIS; [Downes et al., 2016](#)) was used to rate the quality of each study included in our review. The AXIS is a tool that was developed to evaluate overall risk of bias in observational cross-sectional studies specifically. The AXIS contains 20 items that assess various aspects of study design and

Table 1
Variable Coding for Proposed Moderators

Variable	Levels	Examples
Sample diagnosis	Psychological	Anxiety, autism spectrum disorder, depression, eating disorder, mixed psychiatric diagnoses, obsessive-compulsive and related disorders, posttraumatic stress disorder, serious mental illness, substance use disorder
	Physical/Medical	Cancer, cardiovascular disease
	Chronic condition	Chronic pain, lipedema, obesity, tinnitus
	Subclinical	Elevated self-report symptoms without established diagnoses
Type of AAQ	None	Community, unscreened, students
	AAQ-II (7 items)	
	AAQ with >7 items	
Type of well-being	Domain-specific AAQ	AAQ-Weight, Body Image-AAQ, Chronic Pain Acceptance Questionnaire, Voices Acceptance and Action Scale
	Overall quality of life	General Health Questionnaire (12 items), Short Form Health Survey (36 items), Short Warwick Edinburgh Mental Well-Being Scale, WHOQOL
	Life satisfaction/flourishing	Meaning in Life Questionnaire Presence of Meaning subscale, Mental Health Continuum-Short Form, Psychological Wellbeing Scale, Satisfaction with Life Scale, Quality of Life Enjoyment and Satisfaction Questionnaire
	Valued action	Chronic Pain Values Inventory-Success, Engagement in Life Scale, Valuing Questionnaire-Progress

Note. AAQ = Acceptance and Action Questionnaire.

reporting quality, including clarity of study aims, sample size justification, nonresponse bias, and discussion of study limitations. Criteria for each item are detailed in the original study (see [Downes et al., 2016](#)).

Each item is coded as “yes,” “no,” or “don’t know.” To quantify study quality ratings, “yes” counted as 1, “no” and “don’t know” were considered 0, except for items 13 (“Does the response rate raise concerns about non-response bias?”) and 19 (“Were there any funding sources or conflicts of interest that may affect the authors’ interpretation of the results?”), which were reverse-coded. Item scores were summed to create an overall quality rating variable (possible range = 0 to 20). CWO and ALB first practiced rating 10 articles independently and discussed any discrepancies in scores to clarify application of the rating rubric. The remaining articles were independently scored by each rater, and uncertainties in scoring were resolved through discussion between the raters.

STATISTICAL ANALYSES

Interrater Reliability

Interrater reliability analyses were conducted using *AgreeStat360* ([agreestat.com](#)), a cloud-based interrater reliability program, based on [Gwet \(2014\)](#). Traditionally, interrater reliability coefficient interpretation is based on the Altman’s Kappa Benchmark Scale ([Altman, 1991](#)), with the following benchmarks: <0.2 (poor), 0.21–0.40 (fair), 0.41–0.60 (moderate), 0.61–0.80 (good), and 0.81–1.0 (very good). However, to account for often misleading interpretations of traditional kappa coefficients for interrater reliability (i.e., assuming that coefficients directly translate to magnitude of agreement irrespective of study sample sizes instead of degree of “true” certainty alongside unknowns; [Gwet, 2014](#)), we adopted the benchmarking procedure outlined by [Gwet \(2014\)](#). This procedure computes the probability that a given agreement coefficient falls into a range of certainty values between <0.20–1.0, based on the Altman’s Kappa Benchmark Scale ([Altman, 1991](#)). For example, if the probability of a coefficient falling within this range is small, we would interpret the likelihood that “true” agreement at a given value is small and vice versa. Cumulative membership probabilities were then computed for each kappa coefficient using procedures outlined by [Gwet \(2014\)](#) and compared to a cumulative probability cut-off point of 0.95 or higher (i.e., coefficients with a probability of 0.95 or higher are likely to fall within that range or benchmark values as a value of “true” certainty). Thus, this procedure allows for interpretation of the

coefficient and its strength while accounting for probability. We were primarily concerned with achieving “good” or “very good” agreement values and probabilities for Kappa and AC_1 .

Meta-Analyses

Meta-correlation and meta-regression analyses were conducted using the *metafor* package ([Viechtbauer, 2010](#)) in R ([R Core Team, 2022](#)). For the meta-correlation analysis, in the first step, effect size estimates and their corresponding sample variances were calculated based on raw correlation coefficients and sample sizes. Unbiased estimates of the correlation coefficient were determined by correcting negative bias in the raw correlation coefficient ([Olkin & Pratt, 1958](#)), and approximately unbiased estimates of the sampling variances were obtained. In the second step, a meta-analytic model was fitted using the unbiased estimates calculated in step one to obtain a meta-correlation coefficient. Given the differences in sample characteristics and methodology across studies, assumed heterogeneity was estimated with the Hunter-Schmidt estimator ([Field, 2001, 2005](#)).

For the mixed-effects meta-regression, proposed moderators were added to the meta-analytic model to test whether they explained heterogeneity. The Knapp and Hartung adjustment was used to account for uncertainty in the estimate of heterogeneity among true effects, based on a nonnormal reference distribution ([Knapp & Hartung, 2003](#)). Moderator effects were tested in two separate meta-regression models. The first used predictors representing study characteristics: year of publication, mean age, sample size, percent female, sample diagnosis (psychological, physical/medical, chronic, subclinical, nonclinical), and study quality. The second was based on measure characteristics: type of AAQ (AAQ-II, old AAQ, domain-specific AAQ) and aspect of well-being (quality of life, life satisfaction/flourishing, valued action). [Table 1](#) describes how moderator variables were coded with examples. The reason for using two meta-regression models was to reduce listwise deletion of studies to maintain power and representativeness of the sample. However, given risk of Type I error, we used the conservative Bonferroni correction ($p = .05/2 = .025$) to interpret significance.

Publication Bias

Publication bias was assessed using a funnel plot and regression test for funnel plot asymmetry ([Egger et al., 1997](#); [Sterne et al., 2001](#)). A funnel plot provides helpful visual representation for detecting heterogeneity and certain types of publication bias, whereas the regression test permits sta-

tistical evaluation of the relationship between observed outcomes and a specific predictor that is hypothesized to be related to the observed outcomes when there is publication bias (e.g., standard error, sampling variance, sample size). Standard error was used as the predictor in our regression (Sterne & Egger, 2005).

Results

INTERRATER RELIABILITY

Percent agreement between the first two authors' coding was 92.3% in the article screening phase (SE = 0.010; 95% CI = 0.903, 0.944; $p < 0.01$). Appendix A presents tables with the traditional

Table 2
Measures of Psychological Inflexibility and Well-Being Included in Meta-Analysis

Psychological Inflexibility		Well-Being	
Acronym	Measure	Acronym	Measure
6-PAQ	Parental Acceptance Questionnaire	BIEPS-A	Psychological Wellbeing Scale for Adults (Translated)
AADQ-6	Acceptance and Action Diabetes Questionnaire	Bull's Eye	
AAQ-CVD	Acceptance and Action Questionnaire-Cardiovascular Disease	CAQ-8	Committed Action Questionnaire (8 items)
AAQ-9	Acceptance and Action Questionnaire (9 items)	CAQ-18	Committed Action Questionnaire (18 items)
AAQ-10	Acceptance and Action Questionnaire (10 items)	CompACT-18-Valued Action	Comprehensive Assessment of Acceptance and Commitment Therapy processes (18 items)
AAQ-16	Acceptance and Action Questionnaire (16 items)	CompACT-Valued Action	Comprehensive Assessment of Acceptance and Commitment Therapy processes (23 items)
AAQ-H	Acceptance and Action Questionnaire-Hoarding	CPVI-Success	Chronic Pain Values Inventory
AAQ-II	Acceptance and Action Questionnaire-II	ELS	Engaged Living Scale
AAQ-II-6	Acceptance and Action Questionnaire-II (6 items)	EQ-5D	EuroQol (5 Dimensions)
AAQ-US	Acceptance and Action Questionnaire-University Students	EUROHIS-QOL	-
AAQ-W	Acceptance and Action Questionnaire-Weight Related Difficulties	FACT-G	Functional Assessment of Cancer Therapy - General
AAQ-W-R	Acceptance and Action Questionnaire for Weight-Related Difficulties – Revised	FS	The Flourishing Scale
BI-AAQ	Body Image Acceptance and Action Questionnaire	GB-CORE	Clinical Outcomes in routine Evaluation-General Population
CPAQ-8	Chronic Pain Acceptance Questionnaire (8 items)	GHQ-8	General Health Questionnaire (8 items)
CPAQ-20	Chronic Pain Acceptance Questionnaire (20 items)	GHQ-12	General Health Questionnaire (12 items)
CPAQ-34	Chronic Pain Acceptance Questionnaire (34 items)	GWBS	General Wellbeing Schedule
CTAQ	Chronic Tinnitus Acceptance Questionnaire	ICECAP-O	ICEpop CAPability measure for Older people
IBSAAQ	Irritable Bowel Syndrome Acceptance and Action Questionnaire	IWB	Index of Wellbeing
PIPS	Psychological Inflexibility in Pain Scale	LET	Life Engagement Test
PIPS-II	Psychological Inflexibility in Pain Scale-II	Life Satisfaction Item	
SA-AAQ	Social Anxiety Acceptance and Action Questionnaire	LSQ	Life Satisfaction Questionnaire
TAQ	Tinnitus Acceptance Questionnaire	MHC-SF	Mental Health Continuum-Short Form
VAAS	Voices Acceptance and Action Scale	MLM	Meaningful Living Measure
WAAQ	Work Related Acceptance and Action Questionnaire	MLQ-P	Meaning in Life Questionnaire-Presence of Meaning

Table 2
(Continued)

Psychological Inflexibility		Well-Being	
Acronym	Measure	Acronym	Measure
WAAQ-modified	Work Related Acceptance and Action Questionnaire-modified	MPFI-Committed Action, Values subscales	Multifaceted Psychological Flexibility Inventory
		PERMA	Positive Emotion, Engagement, Positive Relationships, Meaning, Accomplishments/Achievements Profiler
		Personal Strivings-Autonomous	Personal Strivings Measure
		Personal Strivings-Progress	Personal Strivings Measure
		PROMIS-G-Mental	Patient Reported Outcome Measurement Information System-Global Health Scale
		PWB-Autonomy, Personal Growth, Purpose in Life, and Positive Relations subscales	Psychological Wellbeing Scale
		Q-LES-Q-General Activities and Subjective Feelings subscales	Quality of Life Enjoyment and Satisfaction Questionnaire
		QOLI	Quality of Life Inventory
		QOLQ	Quality of Life Questionnaire
		QOL Single Item	Quality of Life (single item)
		Scales of Social Wellbeing	
		SF-8-Mental Component Summary	Short Form Health Survey (8 items)
		SF-12-Mental Component Summary	Short Form Health Survey (12 items)
		SF-36-Emotional Functioning	Short Form Health Survey (36 items)
		SF-36-Mental Health	Short Form Health Survey (36 items)
		SF-36-Role Emotional	Short Form Health Survey (36 items)
		SF-36-Social Functioning	Short Form Health Survey (36 items)
		SF-36-Vitality	Short Form Health Survey (36 items)
		SWEMWBS	Short Form-Warwick-Edinburgh Mental Wellbeing Scale
		SWLS	Satisfaction with Life Scale
		VLQ-Consistency	Valued Living Questionnaire
		VQ-Progress	Valuing Questionnaire
		VQ-Progress (3-item version)	Valuing Questionnaire
		VT	Values Tracker
		WHO-5	World Health Organization- Five Wellbeing Index
		WHOQOL-Psychological and Social	World Health Organization Quality of Life Questionnaire
		WHOQOL-BREF	Abbreviated World Health Organization Quality of Life Questionnaire
		WHOQOL-BREF-Psychological	Abbreviated World Health Organization Quality of Life Questionnaire
		WHOQOL-BREF-Social	Abbreviated World Health Organization Quality of Life Questionnaire

kappa benchmarking values (Altman, 1991), qualitative descriptions based on cumulative membership probability, and five agreement coefficients of interrater reliability including: Kappa, AC₁, Scott's Pi, Krippendorff, and Brennan-Prediger. Based on the Altman procedure, agreement based on Kappa was "good."

STUDY CHARACTERISTICS

The 151 studies included in this meta-analysis represented 70,738 participants, at least 35 countries, 22 languages, 25 versions of the AAQ, 43 different well-being scales, and 262 correlation analyses (details are presented in Tables 2 and 3). A range of samples were represented in the

Table 3
Breakdown of Studies by Country, Language, Psychological Inflexibility Measure, and Well-Being Measure

Count (%)							
<i>k</i> = 151 (number of studies)		<i>N</i> = 262 (number of correlation analyses)					
Country ¹		Language					
		PI Measure ²	Well-Being Measure ¹				
Argentina	1 (0.7%)	Chinese	6 (4.0%)	AAQ-9	4 (1.5%)	CAQ-8	13 (5.0%)
Australia	8 (5.3%)	Croatian	1 (0.7%)	AAQ-10	8 (3.1%)	CAQ-18	7 (2.7%)
Austria	1 (0.7%)	Danish	1 (0.7%)	AAQ-16	10 (3.8%)	CompACT-Valued Action	4 (1.5%)
Belgium	3 (2%)	Dutch	5 (3.3%)	AAQ-H	2 (0.8%)	CPVI-Success	4 (1.5%)
China	5 (3.3%)	English	73 (48.3%)	AAQ-II	155 (59.2%)	ELS	3 (1.1%)
Colombia	3 (2%)	Farsi	1 (0.7%)	AAQ-US	2 (0.8%)	EQ-5D	7 (2.7%)
Croatia	1 (0.7%)	Finnish	4 (2.6%)	AAQ-W	3 (1.1%)	EUROHIS-QOL	3 (1.1%)
Cyprus	2 (1.3%)	German	5 (3.3%)	CPAQ-8	9 (3.4%)	GB-CORE	2 (0.8%)
Denmark	2 (1.3%)	Greek	2 (1.3%)	CPAQ-20	37 (14.1%)	GHQ-12	29 (11.1%)
Ecuador	1 (0.7%)	Hungarian	1 (0.7%)	CTAQ	2 (0.8%)	MHC-SF	3 (1.1%)
England	10 (6.6%)	Italian	9 (6%)	PIPS	6 (2.3%)	MLQ-P	4 (1.5%)
Finland	4 (2.6%)	Japanese	1 (0.7%)	SA-AAQ	2 (0.8%)	Personal Strivings-Autonomous	2 (0.8%)
Germany	4 (2.6%)	Korean	2 (1.3%)	VAAS	2 (0.8%)	Personal Strivings-Progress	2 (0.8%)
Hong Kong	3 (2%)	Mandarin	3 (2%)	WAAQ	8 (3.1%)	PWB	6 (2.3%)
Hungary	1 (0.7%)	Norwegian	3 (2%)	WAAQ-modified	2 (0.8%)	QOLI	4 (1.5%)
India	1 (0.7%)	Persian	1 (0.7%)			SF-8-Mental Component Summary	2 (0.8%)
Iran	2 (1.3%)	Polish	1 (0.7%)			SF-12-Mental Component Summary	5 (1.9%)
Italy	9 (6%)	Portuguese	4 (2.6%)			SF-36-Emotional Functioning	2 (0.8%)
Japan	1 (0.7%)	Serbian	1 (0.7%)			SF-36-Mental Health	20 (7.6%)
Latin America	1 (0.7%)	Spanish	16 (10.6%)			SF-36-Role Emotional	4 (1.5%)
Norway	3 (2%)	Swedish	9 (6%)			SF-36-Social Functioning	11 (4.2%)
Poland	1 (0.7%)	Turkish	2 (1.3%)			SF-36-Vitality	8 (3.1%)
Portugal	4 (2.6%)					SWEMWBS	2 (0.8%)
Serbia	1 (0.7%)					SWLS	29 (11.1%)
Singapore	1 (0.7%)					VLQ	7 (2.7%)
South Korea	2 (1.3%)					VQ-Progress	22 (8.4%)
Spain	9 (6%)					WHO-5	5 (1.9%)
Sweden	9 (6%)					WHOQOL-Psychological	2 (0.8%)
Taiwan	1 (0.7%)					WHOQOL-BREF	5 (1.9%)
The Netherlands	1 (0.7%)					WHOQOL-BREF-Psychological	5 (1.9%)
Turkey	2 (1.3%)					WHOQOL-BREF-Social	4 (1.5%)
UK	10 (6.6%)						
USA	37 (24.5%)						
International	6 (4.0%)						

Note. Please see Table 2 for a complete list of measures included in this review and their corresponding acronyms.

¹ One study did not indicate country in which data were collected.

² Measures that were only used once are not included in the table. For psychological inflexibility, these were the 6-PAQ, AADQ-6, AAQ-CVD, AAQ-II-6, AAQ-W-R, BI-AAQ, CPAQ-34, IBSSAQ, PIPS-II, TAQ. For well-being, they were the BIEPS-A, Bull's eye, CompACT-18-VA, CPVI, FACT-G, FS, GHQ-8, GWBS, ICECAP-O, IWB, LET, Life Satisfaction single item, LSQ, MLM, MPFI-Committed Action, MPFI-Values, PERMA, PROMIS-G-Mental, PWB-Autonomy, PWB-Personal Growth, PWB-Purpose in Life, PWB-Positive Relations, Q-LES-Q, Q-LES-Q-General Activities, Q-LES-Q-Subjective Feelings, QOLQ, Scales of Social Well-Being, QOL single item, VLQ-Consistency, VQ-Progress (3-item version), VT, WHOQOL, and WHOQOL-Social.

Table 4
Beta Coefficients From Meta-Regression Models Predicting Correlation Between Psychological Inflexibility and Well-Being

Predictor	β	95% CI	p	R^2
<i>Study Characteristics (k = 232)</i>				.016
Sample diagnosis				
Psychological ¹	0.029	-0.027; 0.084	.312	
Medical ¹	0.044	-0.025; 0.113	.213	
Chronic condition ¹	0.045	-0.009; 0.099	.100	
Subclinical¹	0.157	0.051; 0.263	.004	
Sample mean age	-0.001	-0.003; 0.001	.181	
Year of publication	-0.002	-0.007; 0.003	.429	
Percent female	-0.001	-0.002; 0.001	.319	
Sample size	0.000	-0.000; 0.000	.848	
Quality rating	0.001	-0.010; 0.012	.867	
<i>Measure Characteristics (k = 262)</i>				.168
Type of psychological inflexibility measure				
Domain-specific²	0.087	0.049; 0.125	<.0001	
AAQ (old version) ²	0.041	-0.018; 0.100	.178	
Type of well-being measure				
Life satisfaction/flourishing ³	0.046	0.002; 0.089	.042	
Valued action³	0.113	0.074; 0.152	<.0001	

Note. Significant differences based on Bonferroni-corrected p -value are bolded.

¹ Reference level is no diagnosis.

² Reference level is the AAQ-II.

³ Reference level is quality of life measures.

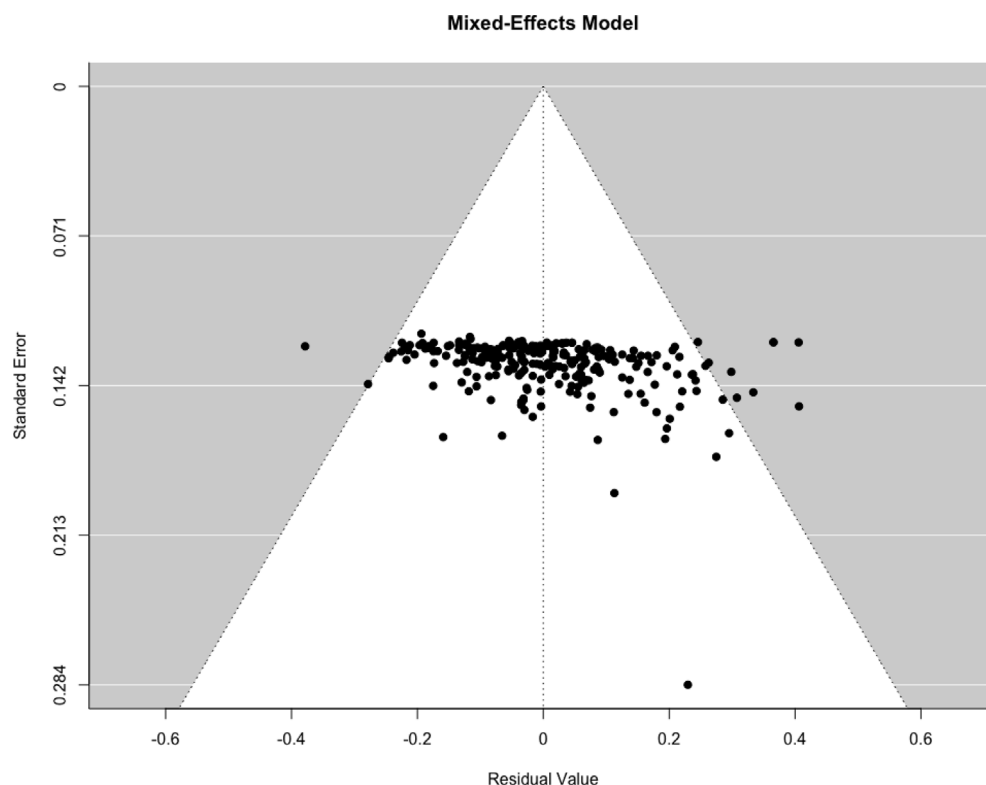


FIGURE 2 Funnel plot of studies included in current meta-analysis, accounting for significant moderators.

current review, including adults with chronic pain, women with lipedema, undergraduate students, people seeking psychological treatment,

and customer service workers. The mean quality rating out of a possible total of 20 was 13.2 ($SD = 1.7$, range = 9 to 17). Detailed descriptions

of each study are presented in Appendix B and references for articles included in the meta-analysis are in Appendix C.

META-CORRELATION

Across 262 correlational analyses, the overall effect size of the correlation between psychological inflexibility and well-being was $r = -.467$, 95% CI $[-.488, -.446]$, $p < .0001$, indicating that more psychological inflexibility was associated with worse well-being on average. The amount of heterogeneity in the model was estimated to be $\tau^2 = 0.0269$, 95% CI $[0.0152, 0.0227]$, which was significant, $Q(261) = 5408.64$, $p < .0001$. In addition, the proportion of variability in effect size estimates across studies due to heterogeneity rather than sampling variability was $I^2 = 95.11\%$, 95% CI $[91.67, 94.27]$. The ratio of total variability in observed outcomes to sampling variability was $H^2 = 20.47$, 95% CI $[12.01, 17.44]$ (Higgins & Thompson, 2002). Both indices suggested considerable variability that support follow-up moderation analyses.

MODERATOR ANALYSES

In the first meta-regression model of study characteristics, only sample diagnosis significantly predicted variance in effect size estimates, with subclinical samples showing a higher overall correlation coefficient (or lower *absolute* correlation coefficient) relative to samples without diagnoses ($\beta = 0.157$, 95% CI $[0.051, 0.263]$, $p = .0038$; see Table 4). In other words, samples without diagnoses generally showed a stronger relationship between psychological inflexibility and well-being relative to samples with elevated symptoms. There were no differences in the magnitude of the correlation between clinical—including psychological, physical/medical, and chronic conditions—and nonclinical samples. Year of publication, mean age, sample size, proportion of women, and study quality did not significantly moderate the relationship between psychological inflexibility and well-being ($ps > .10$).

In the second meta-regression model of measure characteristics, type of AAQ and type of well-being measure significantly predicted variance in effect size estimates (see Table 4). Specifically, relative to the AAQ-II, domain-specific AAQs were associated with a higher correlation coefficient (or lower *absolute* correlation coefficient), indicating a stronger relationship between general psychological inflexibility and well-being than between domain-specific psychological inflexibility and well-being ($\beta = 0.087$, 95% CI $[0.049, 0.125]$, $p < .0001$). There was no significant difference

between older versions of the AAQ and the AAQ-II. In addition, compared to valued-action measures, overall quality-of-life measures were more strongly associated with psychological inflexibility ($\beta = 0.113$, 95% CI $[0.074, 0.152]$, $p < .0001$). There was no significant difference between quality-of-life and life satisfaction/flourishing measures based on the Bonferroni-corrected p -value; $p = .030$. Forest plots with studies separated by type of AAQ are presented in Appendices D, E, and F.

PUBLICATION BIAS

Given that sample diagnosis, type of AAQ, and type of well-being measure were significant moderators in their respective models, they were included in the funnel plot to account for heterogeneity. Thus, the x -axis of the funnel plot shows residuals rather than observed effect sizes. The funnel plot in Figure 2 suggests there may be publication bias, though it is plausible that the observed asymmetry is due to other reasons (Sterne et al., 2011). For example, the asymmetry in Figure 2 indicates bias toward higher positive residuals, which would translate to lower absolute effect size estimates given that all observed effect sizes were negative. Consequently, any correction for the observed bias would be toward a stronger relationship between psychological inflexibility and well-being. Because publication bias is typically in the direction of larger effect sizes, it is less likely that the observed bias is due to reporting bias. Rather, it could be attributed to other factors, such as unobserved moderators, sampling variation, and methodological differences. The regression test for funnel plot asymmetry supported the interpretation of presence of asymmetry ($t = 5.441$, $df = 252$, $p < .0001$).

Discussion

The present meta-analysis examined the relationship between psychological inflexibility, measured by the AAQ and its variants, and well-being, variously defined as quality of life, life satisfaction/flourishing, and valued action. Based on 262 correlation coefficients reported from 151 studies across over 35 countries and 22 languages, the overall correlation between psychological inflexibility and well-being was $-.47$, 95% CI $[-.49, -.45]$. That is, psychological inflexibility and well-being were moderately and negatively associated, with well-being decreasing by .47 units for each 1-unit increase in psychological inflexibility. This result is consistent with our prediction that psychological inflexibility, generally understood as a maladaptive process (Hayes et al., 2006), would be associ-

ated with worse well-being. Furthermore, the magnitude of the correlation coefficient suggests that psychological inflexibility explains sizable variance in well-being (approximately 22%), supporting ongoing research efforts to identify effective ways to target inflexibility in psychological interventions (e.g., [Fledderus et al., 2012](#); [McCracken & Gutierrez-Martinez, 2011](#)).

At the same time, the 78% of variance in well-being not accounted for by psychological inflexibility points to the importance of considering other factors that influence well-being when developing and delivering treatments, including other putative mediators of intervention outcomes (e.g., mindfulness, dysfunctional thoughts, anxiety sensitivity; [Hayes et al., 2022](#)) and environmental or contextual variables (e.g., adverse childhood events, social support, and subjective socioeconomic status; [Kalmakis & Chandler, 2015](#); [Präg et al., 2016](#); [Secor et al., 2017](#)). Having coherent intervention strategies or treatment kernels that target multiple processes of change relevant to well-being with precision may give clinicians more flexibility with respect to how they effect healthy change in their clients ([Hofmann & Hayes, 2019](#); see e.g., [Ong et al., 2022](#)). For instance, a clinician may switch from targeting process A with kernel X to targeting process A with kernel Y or process B with kernel Z if they notice that the client's gains in process A have plateaued, understanding that the kernel and/or process of change that works for one client may not work for another. In addition, attending to the influence of extra-individual variables on well-being may naturally lead to organization-level or community-based interventions focused on environmental factors (e.g., increasing accessibility to resources)—beyond equipping people with psychological skills—as part of a more holistic approach to enhancing well-being ([Eriksson et al., 2018](#); [Hawley & Williford, 2015](#)).

Moderator analyses indicated that the relationship between psychological inflexibility and well-being was stronger in samples without reported symptoms (e.g., community sample) relative to subclinical samples with elevated symptoms (not formally assessed for diagnoses); there was no difference between nonclinical and clinical samples. In other words, the moderating influence of sample symptom severity may be nonlinear, wherein nonclinical and clinical samples are more similar in their presentation than a subclinical sample. One interpretation is that the AAQ and its variants do not perform as well in subclinical populations, given that many AAQ measures have been developed and validated in either community/student

or clinical samples (e.g., [Bond et al., 2011](#); [McCracken et al., 2004](#)). Another is that the AAQ and its variants tend to treat psychological inflexibility as a trait, and nonclinical and clinical samples represent more stable, predictable trajectories, making them a more appropriate audience for the AAQs. In contrast, subclinical samples may be more likely to comprise people responding to an acute or temporary stressor. As such, environmental factors—rather than an ingrained pattern of responding—may play a bigger role in determining well-being, undercutting the association between psychological inflexibility and well-being in the subclinical group.

Relative to domain-specific AAQs, general AAQs tended to estimate a stronger relationship between psychological inflexibility and well-being, which is a surprising finding, given that domain-specific AAQs have generally shown incremental validity with respect to predicting symptom severity over the general AAQ-II (see [Ong et al., 2019](#), for a review). However, if we consider symptom severity and well-being as distinct constructs rather than two ends of a continuum of psychological health ([Kashdan & Rottenberg, 2010](#); [Keyes, 2002](#)), it follows that they may demonstrate different relationships with psychological inflexibility. In fact, results from this meta-analysis suggest that a general AAQ may be more relevant to understanding overall well-being than domain-specific AAQs. Whether domain-specific AAQs are better at predicting symptom severity bears empirical testing in another meta-analysis.

We also found that quality-of-life measures were more strongly associated with psychological inflexibility relative to valued-action measures, with no difference between quality-of-life and life satisfaction/flourishing measures. That is, psychological inflexibility as measured by AAQs was more closely tied to general indices of quality of life than valued action, suggesting that psychological inflexibility is a broad construct better understood as a determinant of overall wellness rather than a particular facet of functioning like valued action. This finding is surprising given that valued action is embedded in the definition of psychological flexibility ([Hayes et al., 2006](#)). However, recent research supports psychological inflexibility and flexibility as independent constructs ([Ciarrochi et al., 2014](#); [Rolffs et al., 2016](#)), so inflexibility may not be as closely related to valued action as we might expect. Furthermore, researchers have found that the AAQ-II weights the experience avoidance aspect of psychological inflexibility more heavily than its behavioral side

(Francis et al., 2016). Regardless, weaker correlations do not necessarily mean that measures are less useful, because the utility of a measure depends on context and stated goals. For example, clinicians may still be more concerned with increasing valued action (e.g., person struggling with depression who reports that life feels meaningless), just as they may be interested in how domain-specific inflexibility influences a client's presenting problem. On the other hand, an epidemiological researcher interested in examining coping strategies linked to overall life functioning may prefer the general AAQ-II.

LIMITATIONS

Results should be interpreted in light of this study's limitations. First, we used cross-sectional data and were only able to establish a *correlational* relationship between psychological inflexibility and well-being. Hence, we cannot conclude that psychological inflexibility *causes* poorer well-being or vice versa. While theoretical models hypothesize such a causal relationship and longitudinal analyses have yielded findings consistent with this hypothesis (Hayes et al., 2022), the results of this meta-analysis only corroborate a contemporaneous association. Second, when determining our eligibility criteria, we tried to balance exclusivity and inclusivity of measures, with the goal of being sufficiently representative and diverse without being so heterogeneous that our findings would be too diluted and not applicable to any group. The heterogeneity indices of our study suggest that our sample may err on the heterogeneous side, thus, it is important to consider results from our moderation analyses in tandem with the primary meta-correlation. Relatedly, despite including 151 studies in our review, we excluded measures of psychological inflexibility not based on the AAQ, including the MPFI (Rolffs et al., 2016), which treats psychological flexibility and inflexibility as independent constructs, and the PPII (Kashdan et al., 2020), which has been found to have the strongest conceptual and psychometric properties among psychological flexibility measures (Cherry et al., 2021). Thus, our findings may not generalize to these measures. Third, the research team selected what counts as "well-being" based on an internal consensus, but there are differences in how various cultures conceptualize well-being (Headey et al., 2022). Consequently, our findings suffer from ethnocentric bias in terms of how we defined well-being and may not be readily applicable to cultures that formulate well-being differently. Finally, to manage the scope of this review and focus on our research

questions, we chose not to assess the relationship between psychological inflexibility and symptom severity, which precluded us from testing incremental validity of the AAQs over symptom severity or discriminant validity between the two constructs (e.g., Tyndall et al., 2019; Wolgast, 2014).

Conclusion

This study represents the first meta-analytic investigation of the relationship between psychological inflexibility and well-being, to our knowledge. Based on present findings, we conclude that psychological inflexibility, as measured by the AAQ and its variants, is on aggregate associated with worse well-being, with well-being defined as quality of life, life satisfaction/flourishing, or valued action. Our results provide meta-analytic evidence to support the hypothesized negative relationship between psychological inflexibility and well-being in the ACT model (Hayes et al., 2006). In addition, moderation results point to differential functions of the AAQ and its domain-specific variants, with the former serving a broader role of predicting general well-being and the latter potentially being more relevant in a clinical setting when working with specific symptom presentations. Thus, we recommend that researchers and clinicians who wish to examine psychological inflexibility and well-being consider the context in which they are working and select a measure that matches their goals and needs.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.beth.2023.05.007>.

References

- Altman, D. G. (1991). *Practical statistics for medical research*. Chapman & Hall/CRC.
- Arch, J. J., & Craske, M. G. (2008). Acceptance and commitment therapy and cognitive behavioral therapy for anxiety disorders: Different treatments, similar mechanisms? *Clinical Psychology: Science and Practice*, 15(4), 4. <https://doi.org/10.1111/j.1468-2850.2008.00137.x>.
- Arch, J. J., Fishbein, J. N., Finkelstein, L. B., & Luoma, J. B. (2022). Acceptance and commitment therapy processes and mediation: Challenges and how to address them. *Behavior Therapy*. <https://doi.org/10.1016/j.beth.2022.07.005>.
- Arch, J. J., Wolitzky-Taylor, K. B., Eifert, G. H., & Craske, M. G. (2012). Longitudinal treatment mediation of traditional cognitive behavioral therapy and acceptance and commitment therapy for anxiety disorders. *Behaviour Research Therapy*, 50(7–8), 7–8. <https://doi.org/10.1016/j.brat.2012.04.007>.
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the Accep-

- tance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy*, 42(4), 676–688. <https://doi.org/10.1016/j.beth.2011.03.007>.
- Brown, S. L., Roush, J. F., Marshall, A. J., Jones, C., & Key, C. (2020). The intervening roles of psychological inflexibility and functional impairment in the relation between cancer-related pain and psychological distress. *International Journal of Behavioral Medicine*, 27(1), 100–107. <https://doi.org/10.1007/s12529-019-09838-8>.
- Cherry, K. M., Hoeven, E. V., Patterson, T. S., & Lumley, M. N. (2021). Defining and measuring “psychological flexibility”: A narrative scoping review of diverse flexibility and rigidity constructs and perspectives. *Clinical Psychology Review*, 84, 101973. <https://doi.org/10.1016/j.cpr.2021.101973>.
- Ciarrochi, J., Sahdra, B., Marshall, S., Parker, P., & Horwath, C. (2014). Psychological flexibility is not a single dimension: The distinctive flexibility profiles of underweight, overweight, and obese people. *Journal of Contextual Behavioral Science*, 3(4), 236–247. <https://doi.org/10.1016/j.jcbs.2014.07.002>.
- Correa-Fernández, V., McNeel, M., Sandoval, J. R., Tavakoli, N., Kahambwe, J. K., & Kim, H. (2020). Acceptance and Action Questionnaire II: Measurement invariance and associations with distress tolerance among an ethnically diverse university sample. *Journal of Contextual Behavioral Science*, 17, 1–9. <https://doi.org/10.1016/j.jcbs.2020.04.002>.
- Dahl, C. J., Wilson-Mendenhall, C. D., & Davidson, R. J. (2020). The plasticity of well-being: A training-based framework for the cultivation of human flourishing. *Proceedings of the National Academy of Sciences*, 117(51), 32197–32206. <https://doi.org/10.1073/pnas.2014859117>.
- Daks, J. S., & Rogge, R. D. (2020). Examining the correlates of psychological flexibility in romantic relationship and family dynamics: A meta-analysis. *Journal of Contextual Behavioral Science*, 18, 214–238. <https://doi.org/10.1016/j.jcbs.2020.09.010>.
- Downes, M. J., Brennan, M. L., Williams, H. C., & Dean, R. S. (2016). Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*, 6(12), e011458.
- Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ*, 315(7109), 629–634. <https://doi.org/10.1136/bmj.315.7109.629>.
- Eisenbeck, N., & Szabó-Bartha, A. (2018). Validation of the Hungarian version of the Acceptance and Action Questionnaire-II (AAQ-II). *Journal of Contextual Behavioral Science*, 9, 80–87. <https://doi.org/10.1016/j.jcbs.2018.07.007>.
- Eriksson, M., Ghazinour, M., & Hammarström, A. (2018). Different uses of Bronfenbrenner’s ecological theory in public mental health research: What is their value for guiding public mental health policy and practice? *Social Theory & Health*, 16(4), 414–433. <https://doi.org/10.1057/s41285-018-0065-6>.
- Field, A. P. (2001). Meta-analysis of correlation coefficients: A Monte Carlo comparison of fixed- and random-effects methods. *Psychological Methods*, 6(2), 161–180. <https://doi.org/10.1037/1082-989X.6.2.161>.
- Field, A. P. (2005). Is the meta-analysis of correlation coefficients accurate when population correlations vary? *Psychological Methods*, 10(4), 444–467. <https://doi.org/10.1037/1082-989X.10.4.444>.
- Finger, I. da R., de Freitas, B. I., & Oliveira, M. da S. (2020). Psychological inflexibility in overweight and obese people from the perspective of acceptance and commitment therapy (ACT). *Eating and Weight Disorders – Studies on Anorexia, Bulimia and Obesity*, 25(1), 169–175. <https://doi.org/10.1007/s40519-018-0541-y>.
- Fledderus, M., Bohlmeijer, E. T., Pieterse, M. E., & Schreurs, K. M. (2012). Acceptance and commitment therapy as guided self-help for psychological distress and positive mental health: A randomized controlled trial. *Psychological Medicine*, 42(3), 485–495. <https://doi.org/10.1017/s0033291711001206>.
- Francis, A. W., Dawson, D. L., & Golijani-Moghaddam, N. (2016). The development and validation of the Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT). *Behavioral Science*, 5(3), 3. <https://doi.org/10.1016/j.jcbs.2016.05.003>.
- Garner, E. V., & Golijani-Moghaddam, N. (2021). Relationship between psychological flexibility and work-related quality of life for healthcare professionals: A systematic review and meta-analysis. *Journal of Contextual Behavioral Science*, 21, 98–112. <https://doi.org/10.1016/j.jcbs.2021.06.007>.
- Gentili, C., Rickardsson, J., Zetterqvist, V., Simons, L. E., Lekander, M., & Wicksell, R. K. (2019). Psychological flexibility as a resilience factor in individuals with chronic pain. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.02016>.
- Gloster, A. T., Klotsche, J., Chaker, S., Hummel, K. V., & Hoyer, J. (2011). Assessing psychological flexibility: What does it add above and beyond existing constructs? *Psychological Assessment*, 23(4), 970–982. <https://doi.org/10.1037/a0024135>.
- Gloster, A. T., Klotsche, J., Ciarrochi, J., Eifert, G., Sonntag, R., Wittchen, H. U., & Hoyer, J. (2017). Increasing valued behaviors precedes reduction in suffering: Findings from a randomized controlled trial using ACT. *Behaviour Research and Therapy*, 91, 64–71. <https://doi.org/10.1016/j.brat.2017.01.013>.
- Gloster, A. T., Meyer, A. H., & Lieb, R. (2017). Psychological flexibility as a malleable public health target: Evidence from a representative sample. *Journal of Contextual Behavioral Science*, 6(2), 2. <https://doi.org/10.1016/j.jcbs.2017.02.003>.
- Gwet, K. L. (2014). *Handbook of inter-rater reliability: The definitive guide to measuring the extent of agreement among raters*. Advanced Analytics LLC.
- Hawley, P. H., & Williford, A. (2015). Articulating the theory of bullying intervention programs: Views from social psychology, social work, and organizational science. *Bullying Prevention and Intervention*, 37, 3–15. <https://doi.org/10.1016/j.appdev.2014.11.006>.
- Hayes, S. C., Ciarrochi, J., Hofmann, S. G., Chin, F., & Sahdra, B. (2022). Evolving an idiomorphic approach to processes of change: Towards a unified personalized science of human improvement. *Behaviour Research and Therapy*, 104155. <https://doi.org/10.1016/j.brat.2022.104155>.
- Hayes, S. C., Hofmann, S. G., Stanton, C. E., Carpenter, J. K., Sanford, B. T., Curtiss, J. E., & Ciarrochi, J. (2019). The role of the individual in the coming era of process-based therapy. *Behaviour Research and Therapy*, 117, 40–53. <https://doi.org/10.1016/j.brat.2018.10.005>.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44(1), 1. <https://doi.org/10.1016/j.brat.2005.06.006>.

- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2011). *Acceptance and commitment therapy, second edition: The process and practice of mindful change*. Guilford Press.
- Headey, B., Trommsdorff, G., & Wagner, G. G. (2022). Alternative recipes for life satisfaction: Evidence from five world regions. *Applied Research in Quality of Life*, 17(2), 763–794. <https://doi.org/10.1007/s11482-021-09937-3>.
- Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine*, 21(11), 1539–1558. <https://doi.org/10.1002/sim.1186>.
- Hofmann, S. G., & Hayes, S. C. (2019). The future of intervention science: Process-based therapy. *Clinical Psychological Science*, 7(1), 1. <https://doi.org/10.1177/2167702618772296>.
- Jankowski, P. J., Sandage, S. J., Bell, C. A., Davis, D. E., Porter, E., Jessen, M., Motzny, C. L., Ross, K. V., & Owen, J. (2020). Virtue, flourishing, and positive psychology in psychotherapy: An overview and research prospectus. *Psychotherapy*, 57, 291–309. <https://doi.org/10.1037/pst0000285>.
- Kalmakis, K. A., & Chandler, G. E. (2015). Health consequences of adverse childhood experiences: A systematic review. *Journal of the American Association of Nurse Practitioners*, 27(8), 457–465. <https://doi.org/10.1002/2327-6924.12215>.
- Kashdan, T. B., Disabato, D. J., Goodman, F. R., Doorley, J. D., & McKnight, P. E. (2020). Understanding psychological flexibility: A multimethod exploration of pursuing valued goals despite the presence of distress. *Psychological Assessment*, 32(9), 829–850. <https://doi.org/10.1037/pas0000834>.
- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, 30(7), 865–878. <https://doi.org/10.1016/j.cpr.2010.03.001>.
- Keyes, C. L. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, 73(3), Article 3. <https://doi.org/10.1037/0022-006X.73.3.539>.
- Keyes, C. L. M. (2002). The mental health continuum: from languishing to flourishing in life. *Journal of Health and Social Behavior*, 43(2), 207–222. <https://doi.org/10.2307/3090197>.
- Kioskli, K., Winkley, K., & McCracken, L. M. (2019). Might psychological flexibility processes and Acceptance and Commitment Therapy (ACT) apply in adults with painful diabetic neuropathy? A cross-sectional survey. *Journal of Contextual Behavioral Science*, 13, 66–73. <https://doi.org/10.1016/j.jcbs.2019.07.002>.
- Kılıç, A., Hudson, J., Scott, W., McCracken, L. M., & Hughes, L. D. (2022). A 12-month longitudinal study examining the shared and unique contributions of self-compassion and psychological inflexibility to distress and quality of life in people with Type 2 Diabetes. *Journal of Psychosomatic Research*, 155, 110728. <https://doi.org/10.1016/j.jpsychores.2022.110728>.
- Knapp, G., & Hartung, J. (2003). Improved tests for a random effects meta-regression with a single covariate. *Statistics in Medicine*, 22(17), 2693–2710. <https://doi.org/10.1002/sim.1482>.
- Krafft, J., Ferrell, J., Levin, M. E., & Twohig, M. P. (2017). Psychological inflexibility and stigma: A meta-analytic review. *Journal of Contextual Behavioral Science*. <https://doi.org/10.1016/j.jcbs.2017.11.002>.
- Levin, M. E., MacLane, C., Daflos, S., Seeley, J. R., Hayes, S. C., Biglan, A., & Pistorello, J. (2014). Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *Journal of Contextual Behavioral Science*, 3, 155–163. <https://doi.org/10.1016/j.jcbs.2014.06.003>.
- McCracken, L. M., & Gutierrez-Martinez, O. (2011). Processes of change in psychological flexibility in an interdisciplinary group-based treatment for chronic pain based on Acceptance and Commitment Therapy. *Behaviour Research and Therapy*, 49(4), 267–274. <https://doi.org/10.1016/j.brat.2011.02.004>.
- McCracken, L. M., & Morley, S. (2014). The psychological flexibility model: A basis for integration and progress in psychological approaches to chronic pain management. *The Journal of Pain*, 15(3), 221–234. <https://doi.org/10.1016/j.jpain.2013.10.014>.
- McCracken, L. M., Vowles, K. E., & Eccleston, C. (2004). Acceptance of chronic pain: Component analysis and a revised assessment method. *Pain*, 107(1), 159–166. <https://doi.org/10.1016/j.pain.2003.10.012>.
- Olkin, I., & Pratt, J. W. (1958). Unbiased estimation of certain correlation coefficients. *The Annals of Mathematical Statistics*, 29(1), 201–211, JSTOR.
- Ong, C. W., Hayes, S. C., & Hofmann, S. G. (2022). A process-based approach to cognitive behavioral therapy: A theory-based case illustration. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1002849>.
- Ong, C. W., Lee, E. B., Levin, M. E., & Twohig, M. P. (2019). A review of AAQ variants and other context-specific measures of psychological flexibility. *Journal of Contextual Behavioral Science*, 12, 329–346. <https://doi.org/10.1016/j.jcbs.2019.02.007>.
- Ong, C. W., Pierce, B. G., Woods, D. W., Twohig, M. P., & Levin, M. E. (2019). The Acceptance and Action Questionnaire – II: An item response theory analysis. *Journal of Psychopathology and Behavioral Assessment*, 41, 123–134. <https://doi.org/10.1007/s10862-018-9694-2>.
- Paladines-Costa, B., López-Guerra, V., Ruisoto, P., Vaca-Gallegos, S., & Cacho, R. (2021). Psychometric properties and factor structure of the Spanish version of the Acceptance and Action Questionnaire-II (AAQ-II) in Ecuador. *International Journal of Environmental Research and Public Health*, 18(6). <https://doi.org/10.3390/ijerph18062944>.
- Präg, P., Mills, M. C., & Wittek, R. (2016). Subjective socioeconomic status and health in cross-national comparison. *Social Science & Medicine*, 149, 84–92. <https://doi.org/10.1016/j.socscimed.2015.11.044>.
- R Core Team (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing.
- Rochefort, C., Baldwin, A. S., & Chmielewski, M. (2018). Experiential avoidance: An examination of the construct validity of the AAQ-II and MEAQ. *Behavior Therapy*, 49(3), 3. <https://doi.org/10.1016/j.beth.2017.08.008>.
- Rolffs, J. L., Rogge, R. D., & Wilson, K. G. (2016). Disentangling components of flexibility via the hexaflex model: Development and validation of the Multidimensional Psychological Flexibility Inventory (MPFI). *Assessment*, 25(4), 4. <https://doi.org/10.1177/1073191116645905>.
- Secor, S. P., Limke-McLean, A., & Wright, R. W. (2017). Whose support matters? Support of friends (but not family) may predict affect and wellbeing of adults faced with negative life events. *Journal of Relationships Research*, 8, e10. <https://doi.org/10.1017/jrr.2017.10>, Cambridge Core.
- Sterne, J. A. C., & Egger, M. (2005). Regression methods to detect publication and other bias in meta-analysis. In *Publication Bias in Meta-Analysis* (pp. 99–110). Wiley. <https://doi.org/10.1002/0470870168.ch6>.

- Sterne, J. A. C., Egger, M., & Smith, G. D. (2001). Investigating and dealing with publication and other biases in meta-analysis. *BMJ*, 323(7304), 101–105. <https://doi.org/10.1136/bmj.323.7304.101>.
- Sterne, J. A. C., Sutton, A. J., Ioannidis, J. P. A., Terrin, N., Jones, D. R., Lau, J., Carpenter, J., Rücker, G., Harbord, R. M., Schmid, C. H., Tetzlaff, J., Deeks, J. J., Peters, J., Macaskill, P., Schwarzer, G., Duval, S., Altman, D. G., Moher, D., & Higgins, J. P. T. (2011). Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. *BMJ*, 343. <https://doi.org/10.1136/bmj.d4002>.
- Tyndall, I., Waldeck, D., Pancani, L., Whelan, R., Roche, B., & Dawson, D. L. (2019). The Acceptance and Action Questionnaire-II (AAQ-II) as a measure of experiential avoidance: Concerns over discriminant validity. *Journal of Contextual Behavioral Science*, 12, 278–284. <https://doi.org/10.1016/j.jcbs.2018.09.005>.
- VanderWeele, T. J., McNeely, E., & Koh, H. K. (2019). Reimagining health—Flourishing. *JAMA*, 321(17), 1667–1668. <https://doi.org/10.1001/jama.2019.3035>.
- Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, 36(3), 1–48. <https://doi.org/10.18637/jss.v036.i03>.
- Wolgast, M. (2014). What does the Acceptance and Action Questionnaire (AAQ-II) really measure? *Behavior Therapy*, 45, 831–839. <https://doi.org/10.1016/j.beth.2014.07.002>.
- Zhao, C., Lai, L., Zhang, L., Cai, Z., Ren, Z., Shi, C., Luo, W., & Yan, Y. (2021). The effects of acceptance and commitment therapy on the psychological and physical outcomes among cancer patients: A meta-analysis with trial sequential analysis. *Journal of Psychosomatic Research*, 140, 110304. <https://doi.org/10.1016/j.jpsychores.2020.110304>.

RECEIVED: December 19, 2022

REVISED: May 4, 2023

ACCEPTED: May 4, 2023

AVAILABLE ONLINE: 26 MAY 2023